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HUMPSORE (STEPHANOFILARIASIS) IN DOMESTIC ANIMALS

Prepared from Helminthological Abstracts 1932-1969
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Nederlandsch-Indische Bladen voor Diergeneeskunde.

BUBBERMAN, C. & KRANEVELD, F. C.—" Over een dermatitis squamosa et crustosa circumscripta bij het rund in Nederlandsch-Indië, genaamd cascado. I. Onderzoekingen over aard en wezen der cascado."XLV (4), 239-278. [1933.]

Bubberman and Kraneveld describe a verminous dermatitis of cattle known as " Cascado."

The disease has been recorded from North Celebes and South Sumatra and is probably identical with the " dermatitis verminosa pruriens bovis " of De Does (1907) described from the East Coast of Sumatra. The disease is not known to occur in buffaloes but in cattle the incidence may be 90 per cent. Poor condition and high rainfall are predisposing factors. Lesions from a few millimetres to 25 cm. in diameter occur on various parts of the body, particularly the sides of the neck, the withers, dewlap, shoulders and around the eye. A number of small papules coalesce to form a large lesion covered with crusts, the hair falls out and the skin thickens but it is rich in blood and lymph which can be squeezed out readily. The lesion extends outwards while the centre becomes hard and covered with a thick, dry crust. Itching causes rubbing which aggravates the lesion. Spontaneous recovery may occur. Microfilariae are numerous in deep scrapings taken after removal of the crusts ; in some cases microfilariae were found in the blood but their identity has not been established. The histological changes agree with the description given by De Does. The causal parasite, *Stephanofilaria Dedoesi*, lives in the epithelial layers and produces an inflammation of the rete Malpighii with proliferation and destruction of epithelial elements, destruction of hair follicles and skin glands, and a small cell infiltration. The parasites are probably transmitted by blood-sucking insects. Direct transmission was attempted but without success. H.M.

IHLE, J. E. W. & IHLE-LANDENBERG, M. E.—" Over een dermatitis squamosa et crustosa circumscripta bij het rund in Nederlandsch-Indië, genaamd cascado. II *Stephanofilaria Dedoesi* (n. gen. n. sp.), een nematode uit de huid van het rund." XLV (4), 279-283. [1933.]

Ihle and Ihle-Landenberg give a description of the nematode *Stephanofilaria Dedoesi* of cattle, which they place in the new genus *Stephanofilaria* of the subfamily Setariinae. Male 2·3-3·2 mm., female 6·1-8·5 mm. long. Oral aperture surrounded by a protruding cuticular rim which has a denticulate edge. Near to the anterior extremity there is a circular thickening which bears a number of small cuticular spines. Male spicules unequal. Female without anus. The parasites were removed from lesions of verminous dermatitis. H.M.

Nederlandsch-Indische Bladen voor Diergeneeskunde en Dierenteelt.

BUBBERMAN, C. & KRANEVELD, F. C.—" Over een dermatitis squamosa et crustosa circumscripta bij het rund in Nederlandsch-Indië, genaamd cascado. III. Het voorkomen van cascado bij de geit." XLVI (2), 67-73. [1934.]

Bubberman and Kraneveld have now found that " Cascado," or Stephanofilariasis, occurs in the goat in Celebes, the lesions in this host being similar to those in cattle. Brief notes on 5 cases are given. B.G.P.

BUBBERMAN, C. & KRANEVELD, F. C.—" Stephanofilariosis. IV. Over het voorkomen bij het rund op Java." XLVI (2), 111-112. [1934.]

Continuing their series of papers on " Cascado " under a new general title, Bubberman and Kraneveld here state that the disease occurs in cattle not only in north Celebes and south Sumatra but also in Java.

BUBBERMAN, C. & KRANEVELD, F. C.—" Stephanofilariosis. V. Twee zware gevallen bij het rund." XLVI (3), 149-151. [1934.]

Description, with excellent photographs, of two very severe cases of stephanofilariosis in cattle from Northern Celebes, showing lesions which measure up to 23 by 30 cm. H.M.

Proceedings of the Helminthological Society of Washington.

DIKMANS, G.—" Observations on stephanofilariasis in cattle." 1 (2), 42-43. [1934.]

Lesions due to *Stephanofilaria stilesi* have been found fairly commonly in cattle in the central U.S.A. by Dikmans. B.G.P.

North American Veterinarian.

DIKMANS, G.—" Nematodes as the cause of a recently discovered skin disease of cattle in the United States." XV (6), 22-25. [1934.]

Dikmans draws attention to the occurrence in cattle in the United States of a skin disease associated with a filarial worm apparently closely related to the disease " cascado " reported from Sumatra as due to *Stephanofilaria dedoesi* by Ihle & Ihle-Landenberg in 1933. The skin lesion begins as a small, pea sized papule covered with a thin scab, the area gradually enlarges through the confluence of a number of these lesions; the skin thickens and often breaks, itching occurs and as a result the involved area becomes torn and bloody and marked by deep cracks. Later the skin may become thick and hornlike. Diagnosis can be made by examining for nematodes scrapings of the affected part. R.T.L.

CHITWOOD, B. G.—" A nematode, *Stephanofilaria stilesi*, new species, from the skin of cattle in the United States." XV (6), 25-27. [1934.]

The filarial worm recently discovered by Dikmans in skin lesions in cattle in the United States has been compared by Chitwood with the worm *Stephanofilaria dedoesi* which causes similar lesions in Sumatra. The chief grounds upon which a new species is created for the American form are that *S. stilesi* n. sp. has the second row of cephalic spines incomplete and asymmetrical, while the vulva is 78 to 90 μ from the anterior end. Chitwood records also the presence of *Rhabditis strongyloides* associated in the skin with *S. stilesi*. R.T.L.

Nederlandsch-Indische Bladen voor Diergeneeskunde en Dierenteelt.

BONGA, B.—" Extracten uit de maand- en jaarverslagen der Gouvernements en Provinciale Veeartsen. No. 74. Een eigenaardige vorm van dermatitis verminosa bij buffels (stephanofilariosis ?)." XLVII (2), 107-108. [1935.]

Bonga reports a peculiar form of verminous dermatitis in buffalo, somewhat similar to stephanofilariasis but with the lesions confined to the ears. Microfilariae were found in sections of infected ears, but fragments of adult worms teased out from scabs were insufficient for specific diagnosis. B.G.P.

Nederlandsch-Indische Bladen voor Diergeneeskunde en Dierenteelt.

KRANEVELD, F. C.—" Stephanofilariosis. VI. Enkele bijzonderheden betreffende het lijden." XLVII (3/4), 183-186. [In Dutch: English & German summaries.] [1935.]

Details are given with regard to breeds of cattle, localities, and parts of the body affected. The condition has also been diagnosed in goats in which it has a greater tendency to spread over the body than in cattle. H.M.

Nederlandsch-Indische Bladen voor Diergeneeskunde en Dierenteelt.

KRANEVELD, F. C.—" Stephanofilariosis. VII. Een door de *Stephanofilaria dedoesi* veroorzaakte ooraandoening bij buffels. (Voorloopige mededeeling)." XLVII (6), 310-316. [In Dutch: English and German summaries p. 316.] [1935.]

A dermatitis affecting the ears of buffalo in Sumbawa and Celebes (Dutch East Indies) is reported by Kraneveld as due to local infection with *Stephanofilaria dedoesi*. The dermatitis takes the form of papules, and occasionally of encrustations, and is restricted to the ears—in contrast to the more generalized skin lesions (" cascado ") caused by this parasite in the ox and the goat. Six photographs of affected ears are appended. B.G.P.

Report of the Chief of the Bureau of Animal Industry, United States Department of Agriculture.

MOHLER, J. R.—" Zoological Division." 1935, pp. 48-55. [1935.]

Stephanofilariasis is now reported from 14 States in the U.S.A.

Indian Journal of Veterinary Science and Animal Husbandry.

PANDE, P. G.—"The etiology of hump sore in cattle: a preliminary report." v (4), 332-342. [1935.]

"Hump sore" affects 90% of the cattle in Assam especially in the rural areas of Tezpur and Sootia. The chief symptom is that of pruritis. It is a filarial disease, adults and microfilariae having been isolated from the lesions. The worms have not been so far diagnosed beyond *Setariinae*. R.T.L.

Proceedings of the Helminthological Society of Washington.

DIKMANS, G., 1936.—"A method for obtaining adults of *Stephanofilaria stilesi* (Nematoda: Stephanofilariidae)." 3 (2), 64.

Pieces of skin from cattle obtained from abattoirs in Baltimore were sliced and put through a meat grinder. The material was then left overnight in a Baermann apparatus. The residue of the centrifuged liquid from the funnel showed embryos of *Stephanofilaria stilesi*. When the ground up material was placed in a coarse screen and washed, intact adult females were found in the washings. R.T.L.

Indian Journal of Veterinary Science and Animal Husbandry.

PANDE, P. G., 1936.—"On the identity of the nematode worm recovered from hump sore of cattle in India." 6 (4), 346-351.

A comparison has been made between adult Filaria worms found in the hump sores of cattle in India and *Stephanofilaria dedoesi*, the embryos of which cause "Cascado" in cattle in the Dutch East Indies, and *S. stilesi* in the United States. The worms belong to the same genus but the Indian form is here named *S. assamensis* n. sp. as both male and female adults are stouter and thicker and the left spicule is much smaller than that in the other two species, while the vulvar orifice of *S. assamensis* like that of *S. stilesi* is further from the mouth than in *S. dedoesi*. R.T.L.

Journal of Helminthology.

BUCKLEY, J. J. C., 1937.—"On a new species of *Stephanofilaria* causing lesions in the legs of cattle in the Malay Peninsula." 15 (4), 233-242.

Buckley describes a new species of *Stephanofilaria*, *S. kaeli*, which was found in lesions in the legs of cattle in Kuala Lumpur, F.M.S. The species differs from the other members of this genus mainly in the number and arrangement of the papillae in the tail of the male. The lesion, which appears to be confined to the legs, and is known locally as "Filarial Sore" or "Krian Sore," is described briefly, and an account of its histo-pathology is included. The adult worms occur in the epithelium which is characterized by an exaggerated down-growth of papillary processes. Microfilariae were found in the sore tissue, but in an apparently undeveloped condition. Mature microfilariae found in blood smears from the sore and from the neck of the infected animal are thought to be those produced by the adult parasites. The possibilities of treatment or control of the disease are discussed. J.J.C.B.

Nederlandsch-Indische Bladen voor Diergeneeskunde en Dierenteelt.

KRANEVELD, F. C. & DJAENOEDIN, R., 1937.—"Stephanofilariosis. VIII. Oriënteerend onderzoek betreffende de therapie van het lijden." 49 (5/6), 332-348.

The drugs tested were brushed on to the lesions daily for a number of days. Promising results were obtained with aqueous solutions of Cooper's arsenical dip. Large lesions cannot be treated with the same concentrations as smaller ones. Too strong solutions produce oedema and necrosis. Favourable results can be expected from 3% solutions for small lesions and 2% for large ones, but further tests are required. Solutions of sodium arsenite should also be further tested. In successful cases the lesions healed and no live parasites could be found in the tissues after treatment. Rotenone gave uncertain results, while paradichlorobenzene, picric acid and a mixture of tar, petroleum, coconut oil and alcohol were ineffective. H.M.

International Veterinary Congress (13th), Zurich-Interlaken, 1938.

DATTA, S. C. A., 1938.—"New researches on some helminthic diseases of India." 1, 720-732.

Datta discusses recent research on helminthic diseases of equines and bovines in India. Those of schistosomic etiology referred to are: bovine nasal granuloma or "snoring disease," and persistent debility in equines, associated with enlarged liver, due to *Schistosoma indicum*. Bursati in horses is referred to and the habronemic theory of its etiology. The filarial diseases include equine lichen tropicus, a microfilarial pityriasis; *Parafilaria multipapillosa* causing "dourine-like plaques" in equines; "hump sore" of cattle caused by *Stephanofilaria assamensis*; periodic ophthalmia in the horse due to microfilaria. A case of microfilarial dermatitis in an old bullock is reported. J.W.G.L.

Indian Veterinary Journal.

SRINIVASAN, V., 1939.—"Dermatitis of cattle—microfilarial (?)." 15 (3), 296-297.

Srinivasan reports three cases of dermatitis in cattle between 6 and 12 years of age in the Saugar district and suggests that they were similar to the disease described by Datta [see Helm. Abs., Vol. VII, Part 5] as a new microfilarial dermatitis of cattle. J.W.G.L.

Indian Journal of Veterinary Science and Animal Husbandry.

SRIVASTAVA, H. D., 1939.—"Cutaneous microfilariasis in Indian cattle. (Preliminary report)." 9 (4), 389-391.

Srivastava describes a chronic form of skin disease of cattle in Bombay Province. Microfilariae were recovered from the skin and were seen in sections but were not found in the blood nor were adult worms found. The microfilariae were unsheathed, 0·252 to 0·28 mm. long and 0·004 mm. in breadth, and their incidence in the skin is subject to seasonal variations. J.J.C.B.

Indian Farming.

MOHAN, R. N., 1945.—"Hump-sore and its treatment." 6 (2), 55–56.

Mohan gives a general account of hump sore in cattle in India, which has been ascribed to *Stephanofilaria assamensis*, and then describes in more detail some methods of treatment which are as yet under trial but have given encouraging results. Two methods are recommended, both of which involve the use of tartar emetic: (i) repeated intravenous injections of this drug in watery solution (for every 100 lb. body weight, 1·5 grains of tartar emetic daily or 2·5 grains on alternate days, to a total of 6 injections), (ii) local application of tartar emetic ointment of suitable strength (4%). The ointment is said to be the more effective method and is simple to use. After curetting the sore, to remove debris and as much as possible of the diseased tissue, the ointment is rubbed vigorously into the wound daily for a few days. This is followed by daily applications of the ointment. If treatment is resisted after initial progress, further curetting is helpful. J.J.C.B.

Cornell Veterinarian.

DIKMANS, G., 1948.—"Skin lesions of domestic animals in the United States due to nematode infestation." 38 (1), 3–23.

In horses in Virginia and Maryland skin lesions may occur similar to those recorded in horses and mules in the Philippines, and in horses in India and Greece. The microfilariae of *Onchocerca reticulata* which occur in skin scrapings are considered to be the primary cause of the lesions. In cattle, skin lesions are due to *Stephanofilaria stilesi*. In sheep in Arizona, New Mexico and possibly in Colorado and Utah, microfilariae of *Elaeophora schneideri* are the primary cause of lesions on the head and feet. In dogs infestation with *Dirofilaria immitis* apparently results in skin lesions. R.T.L.

SKRYABIN, K. I. & SHIKHOBALOVA, N. P., 1948.—[Filariae of animals and man, for veterinarians, medical men and biologists.] Moscow : Ogiz-Selkhozgig, 608 pp., 17 roubles, 45 k. [In Russian.]

In the general part of this monograph on the Filariata the authors deal with the anatomy, biology, importance in human and veterinary medicine and also give a short historical outline of the suborder. In the systematic part descriptions are given of the families : (i) Filariidae, subfamilies Filariinae, Diplotriaeninae ; (ii) Aproctidae, subfamilies Aproctinae, Tetracheilonematinae ; (iii) Setariidae, subfamilies Setariinae, Dipetalonematinae, Stephanofilariinae, and of 85 genera with 351 species. There are 256 figures. Two new genera are created both in the subfamily Filariinae, viz., (i) *Acanthospiculum* n.g. for *Filaria flexuosa* Webb, 1856 and *Onchocerca cervipedis* Wehr & Dickmans, 1935 and (ii) *Cystofilaria* n.g. for *Filaria* sp. Kostitch & Mlinac, 1938 which occurs in large nodules under the oesophageal musculature of dogs and was renamed *Cystofilaria balkanica* by Skryabin & Shikhobalova, 1947. The monograph is provided with many keys and tables and concludes with a host list of the known filariae, an index to species, subgenera, genera, subfamilies, families, and their synonyms, and 636 references. C.R.

Cornell Veterinarian.

BURGHARDT, H. F., WHITLOCK, J. H. & McENERNEY, P. J., 1951.—" Dermatitis in cattle due to *Simulium* (black flies)." 41 (3), 311–313.

Rhabditiform larvae were found in skin scrapings from the ventral abdomen of a Holstein heifer. There were scabby ridges of skin which contained numerous eosinophils infiltrating the inflamed area. The lesions were very suggestive of early lesions of *Stephanofilaria* but the rhabditiform larvae probably resulted from soil contamination. R.T.L.

Indian Veterinary Journal.

MENON, T. C., 1952.—" Contagious otorrhoea in cattle." [Correspondence.] 29 (1), 78.

Between September 1951 and January 1952, Menon successfully treated with euflavine solution 1:1,000 and distilled oil of pine tar 350 cases of stephanofilariasis in buffaloes in the Veterinary Hospital, Tattamangalam, Travancore, Cochin State. R.T.L.

Hemera Zoa. Buitenzorg.

DJAENOEDIN, R. & TANDJUNG ADIWINATA, R., 1953.—" Stephanofilariosis. IX. *Stephanofilaria* sp. pada kulit kerbau." 60 (7/8), 203–215. [English & German summaries pp. 212–214.]

In four buffaloes from Sumbawa, one of the Lesser Sunda Islands in Indonesia, small oval cysts underlying papules with crusty and scaly eczema on the neck and ears were found to contain adult *Stephanofilaria*. The worms closely resembled *S. stilesi* but owing to slight differences in the measurements of the spicules and in their geographical distribution and host they are not specifically identified. The chief measurements of this form and of the known species of *Stephanofilaria* are tabulated. R.T.L.

Transactions of the Royal Society of Tropical Medicine and Hygiene

VARMA, A. K., 1953.—" (1) Occurrence of *Elaeophora poeli* in Indian buffalo. (2) Onchocerciasis of the aorta of cattle in India. (3) Stephanofilariasis in cattle in India." [Demonstration.]

Bos bubalus in Assam is recorded as host of *Elaeophora poeli* for the first time. In Bihar (India), *Bos indicus* is fairly frequently infected with *Onchocerca armillata* and *Stephanofilaria assamensis*. *S. assamensis* is very common in the plain cattle of Assam. R.T.L.

Indian Veterinary Journal.

DAS, K. M., 1955.—" Occurrence of microfilariae of *Stephanofilaria as[s]amensis* in the peripheral blood of cattle." 32 (2), 136–137.

Of 4,058 cattle affected with humpsore in Orissa, India, 399 showed microfilariae of *Stephanofilaria assamensis* in blood smears. This is the first record of these microfilariae being found in the peripheral blood. They did not appear to show any periodicity. M.McK.

Journal of the American Veterinary Medical Association.

LEVINE, N. D. & MORRILL, C. C., 1955.—" Bovine stephanofilarial dermatitis in Illinois." 127 (945), 528–530.

An area of chronic dermatitis on the abdominal mid-line in front of the udder of a yearling heifer was found to be associated with *Stephanofilaria stilesi*. At the bases of some of the hair follicles cysts were found containing nematodes with coiled larvae in their uteri. Larvae were also found outside the cyst, suggesting that the larvae pass through the cyst wall and migrate towards the surface of the skin. The life-cycle is unknown. D.M.

MADDY, K. T., 1955.—" Stephanofilarial dermatitis of cattle." 36 (4), 275–278.

Maddy describes the dermatitis in cattle caused by *Stephanofilaria stilesi* and gives some of his observations on the disease in western districts of the U.S.A. The worms probably enter through the lesions caused by biting flies and are carried either by the flies themselves or by other visiting insects. No treatment is known but the author recalls details of successful treatment of dermatitis produced by three other nematodes. M.McK.

Bulletin of the Calcutta School of Tropical Medicine.

SEN, H. G., SINHA, P. K., CHOWDHURY, A. B. & RAY, H. N., 1956.—" On the microfilaria of *Stephanofilaria assamensis*, the causal organism of 'hump sore' in cattle. A preliminary note." 4 (1), 24–25.

The microfilaria of *Stephanofilaria assamensis* in cattle is now described for the first time from material obtained from hump sores in Bengal. Its microfilaria, unlike those of *S. desdesi* and *S. kaili*, is without a sheath and measures 60 μ to 100 $\mu \times 4\mu$ to 10 μ. The anterior end is knob-like and the tail tapers gradually. From the anterior end the relative distances are: nerve ring 24%, excretory pore 47%, genital cell 59% and anal pore 82%. R.T.L.

Ceylon Veterinary Journal.

VARMA, A. K., 1956.—" Some photomicrographs depicting the pathology of filarial 'hump-sore' in cattle." 4 (1), 11–13.

"Hump sore" in cattle is a chronic granulomatous ulcerative condition of the skin caused by larval and adult forms of *Stephanofilaria assamensis*. It is reputed to occur in Bengal, Orissa and Bihar. Recently Varma has seen a number of cases in the district of Purnea and particularly in the Forbesganj, Araria and Kishanganj areas. Four photomicrographs of sections of the ulcerating skin lesion are reproduced. R.T.L.

Veterinär-Medizinische Nachrichten. Marburg.

HOLZ, J. & TANDJUNG ADIWINATA, R., 1957.—" Untersuchungen über die Antimosan-Therapie der Stephanofilariose beim Rind." Year 1957, No. 1, pp. 25–35. [English, French & Spanish summaries Suppl. pp. 4–5, 12–13, 20–21.]

Holz & Tandjung Adiwinata report on their researches, carried out in Indonesia, on stephanofilariasis in cattle. A study of 50 infected animals has shown that the predilection sites for developmental stages of Stephanofilaria are the skin and the lymph nodes of the shoulder joint and inguinal region. Subcutaneous application of Antimosan (3·5 gm. in a 7% isotonic solution repeated twice at weekly intervals) was successful in improving the clinical condition within 14 days and in healing the lesions after four to six weeks in all the 23 animals treated. A.E.F.

HUQ, M. M., HUSSAIN, Z. & ANSARI, M. Y., 1957. "Humpsore in cattle" [Abstract.] **Proceedings of the Pakistan Science Conference, 9th (1957), Part III, pp. 131–133.**

Huq and his associates report failures in their attempts to set up hump sore in cattle by (i) transmitting flies to artificial wounds after they had fed on hump sores, (ii) smearing of material from hump sores on artificial wounds and (iii) emulsifying the hump sore-fed flies and rubbing them on the artificial wounds. However, the infection was successfully established when living adults were transplanted on to artificial wounds. M. M. Sarwar

Journal of Parasitology.

RAHMAN, M. H., 1957.—"Observations on the mode of infection of the hump of cattle by *Stephanofilaria assamensis* in East Pakistan." 43 (4), 434–435.

In a survey of cattle in East Pakistan 25% of the 25,000 animals examined had hump sore. Two bullocks with hump sore and one bullock and one cow without hump sore were kept for three weeks in a fly-proof shed. About 1,000 wild flies were introduced into the shed and had to procure their food from the cattle. One hundred of the flies were dissected. No filarial larvae were found in the gut or proboscis, but seven of the flies had filarial larvae on the surface of the body. These became detached when the flies were put into water and were identified as larvae of *Stephanofilaria assamensis*. Sores artificially made by scraping the sides of the humps were found to contain filarial larvae. More flies were introduced into the fly-proof shed in a further period of 21 days and 200 flies were dissected. Thirty-five of these flies had larvae on their body surface. The controls did not develop hump sore while kept with the infected bullocks. Rahman concludes from these experiments that transmission by the flies is mechanical and direct. R.T.L.

Annales de Parasitologie Humaine et Comparée.

ANDERSON, R. C., 1958.—"Remarques sur la classification de la famille des Stephanofilariidae (Nematoda—Filarioidea)." 33 (1/2), 173–175.

Anderson has studied the morphology of *Pseudofilaria pertenue* and points out its very close resemblance to *Stephanofilaria* and that it also occurs in skin lesions. He concludes that it is a primitive member of the Stephanofilariinae and does not belong in the Onchocercinae. The classification of the Setariinae is difficult but on morphological grounds members of this subfamily can be aligned with the Stephanofilariidae rather than the Dipetalonematidae. A list of characters common to both *Setaria* and *Stephanofilaria* and of those in which they differ is given. S.W.

Indian Veterinary Journal.

PANNU, H. S., 1958.—"'Hump sore' in Kutch." 35 (4), 172–173.

Hump sore due to *Stephanofilaria assamensis*, which affects all breeds of cattle all over the district of Kutch on the western coast of India, was treated by either (i) surgical removal of the affected skin and cautery of the surrounding and deeper tissues or (ii) application of antimony tartrate ointment (1:6); this caused sloughing and after three applications the lesion was treated as an ordinary wound and healed in a fortnight. (iii) In a few cases two intravenous injections of 20 c.c. of 1% aqueous solution of antimony tartrate at an interval of 10 days, with antimony tartrate dressings at four-day intervals effected a complete cure. R.T.L.

Journal of Helminthology.

SINGH, S. N., 1958.—"On a new species of *Stephanofilaria* causing dermatitis of buffaloes' ears in Hyderabad (Andhra Pradesh) India." 32 (4), 239–250.

Singh describes a new species of nematode, *Stephanofilaria zaheeri* from the skin of the ear of buffalo in Hyderabad, India. This nematode causes ear-sore. The new species differs from *S. stilesi* and *S. assamensis* in not having lateral alae, from *S. dedoesi* and *S. assamensis* in having a distinct anus and from all the species of the genus in the number and arrangement of the caudal papillae of the male—there are three pairs of post-anal ventral papillae and eight pairs of pre-anal papillae. A key is given to the five species now referred to the genus *Stephanofilaria* and the taxonomic position of the genus is considered, the author concluding that the status of Stephanofilariidae and the affinities of *Stephanofilaria* must be uncertain until the structure and mode of transmission of the larva are known. W.G.I.

Deutsche Tierärztliche Wochenschrift.

DIRKSEN, G., 1959.—"Stephanofilarien als Ursache der 'Sommerwunden' des Rindes in den nordwestdeutschen Weidegebieten." 66 (4), 85–88. [English summary p. 88.]

Dirksen finds that summer sores on cattle in north-west German grazing fields appear in spring, and at first form oval areas 3 cm. × 8 cm. with a smooth brick-red surface. Later an uneven red-brown crust forms. The sores are frequently on, and in front of, the udder, the base of the teats, and the knee but may occur also on other parts of the body. The animals become restless due to the irritation of the lesions and the annoyance caused by flies which feed on the exudate from the sores. Microfilariae 155 μ × 4 μ can be found in newly formed sores but disappear after some weeks. Adult worms are found in subepidermal cyst-like spaces surrounded by a zone of histiocytes and fibroblasts. The sores heal over in the autumn but recur the following year, either over the sites of the adult worms in the same places as in the previous year, or in new places to which the microfilariae have migrated. The worms are a species of *Stephanofilaria* and the lesions resemble those produced by *S. stilesi* in North America and a dermatitis described by Ivanov in Bulgaria. W.A.F.W.

SINGH, S. N., 1959. [Department of Parasitology, London School of Hygiene & Tropical Medicine, London.] "Adult specimens of *Stephanofilaria zaheeri* Singh, 1958 from buffaloes in Hyderabad." [Demonstration.] **Transactions of the Royal Society of Tropical Medicine and Hygiene, 53** (1), 9.

Ear sores in buffaloes, in Hyderabad, are caused by *Stephanofilaria zaheeri* Singh, 1958. The female is larger than those of other species of the genus and has a distinct anus, while the male is characterized by the number and arrangement of its caudal papillae. R. T. Leiper

–DIRKSEN, G. & RADERMACHER, F., 1960. [Richard-Götze-Institut, Tierärztlichen Hochschule, Hannover, Germany.] "Erste Ergebnisse der Allgemeinbehandlung der Stephanofilariose ('Sommerwunden') des Rindes mit Antimosan und Neguvon." **Deutsche Tierärztliche Wochenschrift, 67** (3), 70–72. [English summary pp. 71–72.]

The authors describe the treatment of Friesian cows for summer dermatitis caused by *Stephanofilaria* sp. in north-west Germany. Antimosan given subcutaneously at the rate of 0·63 gm. per 50 kg. body-weight three times at weekly intervals produced complete cure or marked improvement in most cases, with a few failures, and Neguvon given orally at the rate of 60 mg. per kg. cured or improved most cases after one or two treatments. Neguvon was well tolerated but Antimosan occasionally produced side effects such as diminution of milk yield, muscular tremors and inappetence. W. M. Fitzsimmons

DIRKSEN, G. & RADERMACHER, F., 1960. "Weitere Erfahrungen mit der Allgemeinbehandlung der Stephanofilariose ('Sommerwunden') des Rindes mit Antimosan und Neguvon." **Veterinär-Medizinische Nachrichten. Marburg, Year 1960, No. 4, pp. 227–234.**

Examination of 16 of 21 cattle treated the previous year with antimosan and of 28 of 32 treated with Neguvon showed that only 6 and 1 respectively had again developed "summer sores" due to *Stephanofilaria* sp. [For abstract of the first part of the work see Helm. Abs., 30, No. 2189.] 4 of the 6 had shown improvement but not a cure the previous year. 6 of these recurrent cases were treated using 70 mg. per kg. body-weight of Neguvon (which had been more effective, easier to administer and better tolerated) and as a result 3 were cured, 2 required a second dose 2 weeks later and the sixth resisted even a third dose. G.I.P.

AHMED, Z., 1961. "The role of *Stephanofilaria zaheeri* in causing ear sore of buffaloes." **Indian Veterinary Journal, 38** (5), 257–262.

In a study of chronic ear lesions in 175 buffaloes in Hyderabad, Ahmed recovered *Stephanofilaria zaheeri* Singh, 1958 [for abstract see Helm. Abs., 27, No. 2451]. 70% to 80% of adult buffaloes in the southern states of India showed this condition but young buffaloes and cattle did not. Initial congestion led to papule and scab formation and ulceration on the inner aspect of both ear lobes. Adult filariae were usually recoverable from the lesions in September and February, and microfilariae in the ear scrapings and peripheral blood in the intervening periods. It is concluded that *S. zaheeri* completes its life-cycle in six months and has two generations within the year. 50 *Musca*, 25 *Hyalomma* and *Haemaphysalis*, 50 *Haematopinus* and 25 mosquitoes from the buffaloes were dissected but no developmental stage of the worm was discovered. Intravenous injection of a 1% tartar emetic solution, or external application of a tartar emetic ointment (1:25) healed the sores. M.A.

HYLDGAARD-JENSEN, C. & MØLLER, T., 1961. "Sommersår hos kvæg." **Medlemsblad for den Danske Dyrlaegeforening, 44** (23), 861–867. [English summary p. 867.]

Histological examination of serial sections of biopsy material from 3 chronic and one acute case of "summer sores" in cattle in Denmark revealed microfilariae only in the latter. The histological picture is said to be identical to that in stephanofilariasis. Although no parasitological examination could be made, the authors presume the condition to be caused by *Stephanofilaria*. G.J.

RADERMACHER, F., 1961. "Versuche mit der Allgemeinbehandlung der Stephanofilariose ('Sommerwunden') des Rindes mit Antimosan und Neguvon." **Dissertation, Hanover,** 38 pp.

IVASHKIN, V. M., KHROMOVA, L. A. & SHMITOVA, G. Y., 1963. [Stephanofilariasis in cattle.] **Veterinariya, 40** (8), 36–39. [In Russian.]

The authors established that *Lyperosia titillans* is the intermediate host of *Stephanofilaria stilesi* in the U.S.S.R. The flies ingest eggs of *S. stilesi* with blood when feeding. The first-stage larvae hatch in the intestine of the fly; they penetrate the coelom and develop to the infective stage in connective tissue capsules. Third-stage larvae migrate into the proboscis and when the fly feeds the larvae enter the skin of cattle. Infection takes place from May to October with the peak from mid-June to the end of August. Access to phenothiazine daily (0·04 gm. per kg. body-weight mixed with salt or concentrates) produces a level of this drug in the faeces sufficient to kill developing larvae of *L. titillans.* C.R.

IVASHKIN, V. M., KHROMOVA, L. A. & SHMITOVA, G. Y., 1963. [Life-cycle of *Stephanofilaria stilesi* Chitwood, 1934.] In: [Helminths of man, animals and plants and their control: Papers on helminthology presented to Academician K. I. Skryabin on his 85th birthday.] *Moscow: Izdatelstvo Akad. Nauk SSSR,* **pp. 227–230. [In Russian.]**

SRIVASTAVA, H. D. & DUTT, S. C., 1963. "Studies on the life history of *Stephanofilaria assamensis,* the causative parasite of 'humpsore' of Indian cattle." **Indian Journal of Veterinary Science and Animal Husbandry,** 33 (4), 173–177.

Of 787 specimens of *Musca conducens* caught feeding on humpsores of cattle in Assam and Orissa, 7 harboured infective larvae which are described, illustrated and identified as *Stephanofilaria assamensis.* The infected flies, all female, contained from 1 to 6 larvae in the head, proboscis and thorax. J.W.S.

HANSEN, H. K. D., 1964. "Om behandling af ringorm og stephanofilariose hos kvaeg med Onychophytex Leo." **Medlemsblad for den Danske Dyrlaegeforening,** 47 (9), 403–406.

Stephanofilariasis is seen in Denmark on the teat, udder, shoulder and medial canthus of the eye of Jersey cows. Drying the wound and painting with "Onychophytex Leo" twice daily for about a week kills the nematode. The remaining ulcer is then encouraged to heal by the application of zinc chloride solution. D.E.J.

PATNAIK, M. M., 1964. "A note on bubaline stephanofilariasis in Orissa." **Indian Veterinary Journal,** 41 (7), 462–466.

Patnaik describes the visible symptoms of *Stephanofilaria zaheeri* infection in buffalo. Female worms and occasional microfilariae were found in superficial scrapings from scab-covered sores, whilst male worms were found in deeper scrapings. Active lesions contained gravid females, adult males and microfilariae. No microfilariae were found in peripheral blood smears. Features considered important in the differentiation of *S. zaheeri* from *S. assamensis* (from cattle), are the 24 circumoral spines in *S. zaheeri* (14–16 spines in *S. assamensis*) and the 30–32 small, evenly arranged cephalic spines of *S. zaheeri* (the 18–20 cephalic spines of *S. assamensis* are arranged regularly or in groups). The proportion of the unstriated cephalic end to the total body length is also considered important. J.H.B.

ROUND, M. C., 1964. "A new species of *Stephanofilaria* in skin lesions from the black rhinocerus (*Diceros bicornis* L.) in Kenya." **Journal of Helminthology, 38** (1/2), 87–96.

Stephanofilaria dinniki **n.sp. from the dermis of** *Diceros bicornis* **in Kenya is distinguished by the length of the left spicule (530 to 750 μ), the anterior position of the vulva (9 to 14 μ), and the curved tails in both sexes. The male tail has a cuticular inflation.** R.C.A.

TREMLETT, J. G., 1964. "Observations on the pathology of lesions associated with *Stephanofilaria dinniki* Round, 1964 from the black rhinoceros (*Diceros bicornis*)." **Journal of Helminthology, 38** (1/2), 171–174.

The centre of lesions associated with *Stephanofilaria dinniki* showed a subacute inflammation with necrosis and obliteration of the epidermis. The periphery of the lesion showed acanthosis with penetration of deeper tissues by long papillary processes. There was increase in vascularity and a mononuclear and eosinophil reaction with perivascular cuffing in the dermis. Adult worms were only found in the peripheral parts of the lesion usually, in hyperplastic epidermis. R.C.A.

DEORANI, V. P. S., 1965. "Studies on the pathology of stephanofilariasis assamensis in cattle." [Correspondence.] *Curr. Sci.,* 34 (13), 410.

Histological sections from infective, acute, desquamative and cicatricial stages of sores caused by *Stephanofilaria assamensis* in cattle were examined; the infective stage is now called the sub-acute stage. Microfilariae were absent in the acute stage, as were adults in the desquamative stage. No dead or dying worms were detected in either of these two stages. This may be due to the migration of the adult worms, after the females have discharged a large number of microfilariae, to the periphery, at least at the onset of the desquamative stage. Reactivation of the adults may cause further acute lesions in the breeding season. The larva may not migrate along the follicle towards the surface of the skin, as was thought to be the case for *S. stilesi*, and there appears to be only one generation each year. The presence of large numbers of young worms in the epidermis and superficial dermis in the acute stage may suggest an exogenous source for the infective larvae. L.E–L.

HIREGAUDAR, L. S. & CHATUPALE, W. V., 1965. "Incidence of *Stephanofilaria assamensis* Pande, 1936 in Gujarat State." [Correspondence.] *Indian vet. J.*, 42 (10), 808–809.

Hump sore disease of cattle in Assam is discussed and adult male and female worms obtained from lesions are described and identified as *Stephanofilaria assamensis.* T.Y.

IVASHKIN, V. M., KHROMOVA, L. A. & SHMITTOVA, G. Y., 1965. [The significance of biological characteristics in the classification of some Filariata.] *Trudy gel'mint. Lab.*, 15, 79–81. [In Russian.]

The authors briefly review the history of *Stephanofilaria* and discuss the morphology and biology of sub-families of Setariidae (Setariinae, Dipetalonematinae and Stephanofilariinae) raising them to family rank. Emended diagnoses for the 3 families are given. J.A.D.

KONO, I., 1965. [Leucoderma of the muzzle in cattle induced by a new species of *Stephanofilaria*.] *Jap. J. vet. Sci.*, 27 (1), 33–39. [In Japanese: English summary p. 38.]

Leucoderma confined to the muzzle of cattle and occurring only in the Amami and Ryukyu Islands, Japan, was shown to be due to a new species of *Stephanofilaria*. The symptoms and pathology of the disease are described. Onset of the disease is at 4 months of age. The adult female nematode is 8·6 to 9·1 mm., the male 3·2 to 3·9 mm. and the microfilaria 70 to 90 μ long. The new species is unnamed, but most closely resembles *S. assamensis*, differing slightly in some body measurements but mainly in the smaller size of the microfilariae, the absence of lateral alae and its restriction to the muzzle of cattle. [From English summary.] P.S.G.

SCHULZ, W. & SCHÄFER, R., 1965. "Sommerwunden bei Rindern in der Altmark und der Versuch ihrer lokalen Behandlung mit Trichlorphon-Wolfen." *Mh. VetMed.*, 20 (7), 254–260.

Stephanofilaria was suspected as the cause of summer sores in cattle in Altmark, East Germany, although pathological examination provided no evidence of filarial infection. Local application of 2 to 3% trichlorphon healed the sores on 22 of 27 cows. J.H.B.

SEIJFFERS, S. M., 1965. "A skin and ear disease of buffaloes in South Sulawesi." *Communicationes vet.*, 9 (1), 19–28. [Indonesian summary pp. 27–28.]

A skin disease of buffaloes, first recorded in 1947 in animals shipped from Kabajana Island to Celebes mainland (Indonesia) is now attributed to *Stephanofilaria dedoesi*. Lesions occur mainly on the neck, dewlap, chest, belly and around the eyes. D.W.L.

HIBLER, C. P., 1966. "Development of *Stephanofilaria stilesi* in the horn fly." *J. Parasit.*, 52 (5), 890–898.

Stephanofilaria stilesi uses *Haematobia irritans* as an intermediate host in the U.S.A. Filarioid larvae found in 455 of 3,707 female flies and 6 of 2,234 male flies, collected from cattle with stephanofilariasis, were morphologically identical to the immature forms of *S. stilesi* recovered from the lesions. When laboratory-reared horn flies were allowed to feed on lesions of naturally infected cattle, 13 of 183 females and one of 201 males became infected with filarioid larvae morphologically identical to those found in naturally infected flies. 4 Holstein calves exposed to naturally infected horn flies developed typical lesions while 3 exposed to uninfected flies did not. When laboratory-reared *H. irritans* were fed on one of the infected calves, 9 of 62 females but none of 122 males became infected. At autopsy, adult *S. stilesi* were found in the skin of each infected calf but not in the controls. The development of the lesions and the morphology of the larvae of *S. stilesi* are described. [A.S.] D.W.L.

LOKE, Y. W. & RAMACHANDRAN, C. P., 1966. "Histopathology of *Stephanofilaria kaeli* lesions in cattle." [Demonstration.] *Med. J. Malaya*, 20 (4), 348.

PATNAIK, B., 1966. "Stephanofilariasis in animals." [Correspondence.] *Indian vet. J.*, 43 (8), 761–762.

Stephanofilaria assamensis is reported from "hump-sore-like" lesions in buffaloes and severe dermatitis in goats (Beetal bucks) in India. No lateral alae could be seen in the worms and the females had a visible anus. *S. zaheeri* is considered a probable synonym of *S. assamensis.* T.Y.

PATNAIK, B. & ROY, S. P., 1966. "On the life cycle of the filariid *Stephanofilaria assamensis* Pande, 1936, in the arthropod vector *Musca conducens* Walker, 1859." *Indian J. anim. Hlth*, 5 (2), 91–101.

Laboratory-reared *Musca conducens* were allowed to feed on "hump-sore" lesions of cattle caused by *Stephanofilaria assamensis.* Microfilariae and all stages up to the infective, sexually distinct larvae were recovered from the flies. Larvae take about 25 days to become infective. *M. conducens* is thus incriminated as an intermediary of *S. assamensis.* M.B-B.

RAMACHANDRAN, C. P., LOKE, Y. W. & NAGENDRAM, C., 1966. "Studies on *Stephanofilaria kaeli* in cattle." [Demonstration.] *Med. J. Malaya*, 20 (4), 344–347.

BHATTACHARJEE, M. L., 1967. "Stephanofilarial dermatitis in an Indian elephant." [Correspondence.] *Curr. Sci.*, 36 (21), 584–585.

Several female specimens of *Stephanofilaria* were collected from the sore of a domestic male elephant in Cachar, Assam, India. The lesion was covered with a crust under which was found sticky pus. Upon removal of pus the lesion appeared red in colour and rich in blood and lymph. Average length of 5 of the worms was 7·7 mm.; width 120 to 153 μ; vulva 89 to 94 μ from anterior end; the cuticle was prominently striated. Because of the unusual host the nematodes are tentatively assigned to a new species, *S. srivastavai*. Detailed descriptions will be published at a later date when males are also available. M.S.J.

BHATTACHARJEE, M. L. & DASS, D. D., 1967. "The study of ear sore of buffaloes due to stephanofilariasis in Assam." *Indian vet. J.*, 44 (5), 400–402.

Sores generally affecting both ears of buffaloes in Assam became apparent in March or April and persisted until the end of October. They began as small haemorrhagic spots resembling insect bites. Serous discharge formed scabs and encrustations. The lesions became purulent, extended up to the external auditory meatus and were covered with a thick creamy material having an offensive odour. *Stephanofilaria* was active in the upper third of the dermis. Microfilariae were found in the spaces of the dermal papillae and adults were found in the dermal epithelium near sebaceous glands. D.W.L.

LOKE, Y. W. & RAMACHANDRAN, C. P., 1967. "The pathology of lesions in cattle caused by *Stephanofilaria kaeli* Buckley, 1937." *J. Helminth.*, 41 (2/3), 161–166.

Leg lesions caused by *Stephanofilaria kaeli* from cattle slaughtered in Selangor, Malaya, were examined. The pathology of these lesions is described and, based on the pathology, possible modes of transmission are suggested. A comparison is made between the pathology of *S. kaeli* lesions and those produced by other *Stephanofilaria* species. M.B-B.

PATNAIK, B. & ROY, S. P., 1968. "Studies on stephanofilariasis in Orissa. II. Dermatitis due to *Stephanofilaria assamensis* Pande, 1936, in the Murrah buffalo (*Bos bubalis*) and the Beetal buck (*Capra hircus*) with remarks on the morphology of the parasite." *Indian J. vet. Sci.*, 38 (3), 455–462.

Stephanofilaria assamensis causing severe dermatitis in *Capra hircus* and humpsore-like lesions in *Bubalus bubalis* is reported from India. The infections were successfully treated with 6% Neguvon emulsion in linseed oil. *S. assamensis* from goats, buffalo and cattle were non-alate and the female had a funnel-shaped anus at the tip of the tail; specimens from goats were slightly longer than those from buffalo and cattle. From a morphological comparison the authors conclude that *S. zaheeri* is a synonym of *S. assamensis*. J.H.B.

SRIVASTAVA, H. D., DUTT, S. C. & MALVIYA, H. C., 1968. "The pre-infective larval stages of *Stephanofilaria assamensis*, the causative parasite of humpsore of Indian cattle." *Indian J. Helminth.*, Year 1967, 19 (2), 81–86.

Larval forms of *Stephanofilaria assamensis*, the cause of humpsore in Indian cattle, from the intermediate host *Musca conducens* were examined and their morphology compared with that reported by Patnaik & Roy (1966). Microfilariae, 1st-stage and early and late 2nd-stage larvae are described and figured in detail. All these larval stages occurred in the flies' abdominal haemocoel, not in the gut as reported by Patnaik & Roy. The presence of spicules in the male infective larvae, reported by Patnaik & Roy, was not observed by the present authors. [See also *Helminth. Abstr.*, 34, No. 132 & 36, No. 3152.] P.S.G.

SRIVASTAVA, H. D. & MALVIYA, H. C., 1968. "Treatment of 'humpsore' in cattle caused by *Stephanofilaria assamensis*." *Indian vet. J.*, 45 (6), 484–488.

Controlled trials were made to test the efficacy of anthelmintics against *Stephanofilaria assamensis* causing humpsore in cattle. Suramin and suramin complex were ineffective and little improvement was shown after treatment with 2% solution of neguvon. Animals treated with 6% neguvon ointment showed complete recovery. No living worms were recovered at tissue biopsy and no relapse occurred in animals 25 months after treatment. J.N.O.

MISHRA, S. P., 1969. "Treatment of ear sore in buffaloes." [Correspondence.] *Indian vet. J.*, 46 (7), 632.

The treatment of ear sore, attributable to a helminth parasite [? *Stephanofilaria*], in buffaloes in Orissa, India, with potassium permanganate lotion (1:1000) or warm hypertonic magnesium sulphate solution, followed by 5 to 10% formalin and ½ to 2% aqua mercurochrome, is briefly described. C.W.G.

ROYCHOUDHURY, G. K. & CHAKRABARTY, A. K., 1969. "Otitis externa in bullocks due to stephanofilarial infection." [Correspondence.] *Indian vet. J.*, 46 (1), 79–80.

Three cases of otitis externa in bullocks, caused by *Stephanofilaria*, were found in Assam, India. 4 male and 2 female filarial worms were found in the lesions. The lesions were cleaned and washed with potassium permanganate, and diethyl carbamazine citrate was given for 10 days at a dosage of 2,000 mg. per day. After 3 months all cases were cured. C.W.G.

KONO, I. & FUKUYOSHI, S., 1967. [Leucoderma of the muzzle of cattle induced by a new species of *Stephanofilaria*. II.] *Jap. J. vet. Sci.*, 29 (6), 301–313. [In Japanese: English summary p. 312.]

A new species of *Stephanofilaria*, unnamed but closely resembling *S. assamensis*, was reported previously as causing a leucoderma of the muzzle of cattle in the Amami and Ryuku Islands, Japan [see *Helminth. Abstr.*, 38, No. 4814]. Investigation into the life-history has shown that eggs are laid in the tissue of the muzzle and hatch to give larvae which appear on the surface. Larvae recovered from the head of *Musca conducens* gave rise to leucoderma when inoculated into the muzzle of an uninfected cow, and it is suggested that this fly acts as the intermediate host. [From English summary.] D.A.Cz.

IVASHKIN, V. M., MAKLAKOVA, L. P. & GOLOVANOV, V. I., 1969. [Stephanofilariasis of the skin of the inner surface of the ear in cattle.] In: Markevich, A.P. [Editor], [Problems of parasitology.] *Trudy nauch. Konf. Parazit. UkSSR* (6th), 1969, Pt. II, pp. 23–24. [In Russian.]

PATNAIK, B., 1970. "Studies on stephanofilariasis in Orissa. V. Treatment and control of 'humpsore' in cattle due to *Stephanofilaria assamensis*." *Indian J. Anim. Sci.*, 40 (2), 167–175.

A number of drugs were used in India to treat 7,661 cases of humpsore in cattle due to *Stephanofilaria assamensis*. Neguvon and asuntol, applied to the sore, were the most effective. Results obtained in cases confined to insect-proof sheds, and cases treated with vaseline, indicated that the lesions are maintained by continuous reinfection. D.A.Cz.

IVASHKIN, V. M., SHMITOVA, G. YA. & KOISHIBAEV, G. K., 1971. [Stephanofilariasis of herbivorous animals.] *Veterinariya, Mosk.*, 48 (3), 66–68. [In Russian.]

Helminthological, clinical and entomological studies of stephanofilariasis, a disease of cattle commonly encountered in the Crimea, Kirghizia, Azerbaijan, Ukraine, Uzbekistan, and in the Krasnodar, Astrakhan and Irkutsk regions of the USSR, revealed that different *Stephanofilaria* spp. infected different areas of the skin. *S. dedoesi* infected the skin about the neck, shoulders and sternum, *S. stilesi* the abdominal region, concha auris and udder, *S. kaeli* chiefly the legs, *S. roni* the muzzle, *S. assamensis* the neck and withers, *S. zaheeri* the ears, *S. andamani* the midventral abdominal region, *S. srivastavi* the back and *S. dinniki* the shoulders. The most important vectors are the biting flies *Lyperosia titillans* and *L. irritans*. The 40% chlorophos ointment was found to be 98% effective after 4 topical applications. The low mammalian toxicity of chlorophos and its persistent effect for 20 to 25 days have made it a drug of choice for treatment of stephanofilariasis. When phenothiazine was fed continuously at the rate of 20 mg. per kg. body-weight, it was very effective in controlling flies by making the faeces poisonous to flies feeding upon it. N.M.L.

PAL, A. K. & SINHA, P. K., 1971. "*Stephanofilaria assamensis* as the cause of common chronic ulcerated growth at the base of the dewclaws in cattle in West Bengal." *Indian vet. J.*, 48 (2), 190–193.

Cases of chronic ulcerated growth around the dewclaws of cattle in India are described. Individuals of *Stephanofilaria assamensis* were removed surgically from the lesions and are assumed to be the cause of the condition. Application of 6% Neguvon ointment was effective in 24 of 30 cases. M.R.N.S.

ANNOTATED BIBLIOGRAPHIES

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59 references covering 1932—1969. £0.50 ($1.30)

2 *Taenia saginata* and *T. solium* in Lebanon, Turkey and Yugoslavia.
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71 references covering 1932—1969. £0.70 ($1.80)

4 Humpsore (Stephanofilariasis) in domestic animals.
71 references covering 1932—1969. £0.70 ($1.80)

5 Skin lesions in domestic animals caused by *Elaeophora*, *Rhabditis* and *Parafilaria*.
55 references covering 1932—1969. £0.50 ($1.30)

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Prices include postage by surface mail.